

## Revision of the genera of the subfamily Microtypinae (Hymenoptera: Braconidae)

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Key words: Hymenoptera; Braconidae; Microtypinae; *Plesiotypus*; *Neomicrotypus*; *Microtypus*; Neotropical; Pacific; Holarctic, Oriental; keys.

The genera of the subfamily Microtypinae are revised and two new genera are described and illustrated. *Plesiotypus* gen. nov. (type species: *P. depressus* spec. nov.) from India and *Neomicrotypus* gen. nov. (type species: *N. penai* spec. nov.) from Chile. Keys to the genera of Microtypinae and to the species of *Plesiotypus* are added. *Plesiotypus fullawayi* (Beardsley, 1961) is a new combination.

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### Introduction

The small subfamily Microtypinae Szépligeti, 1908 was included provisionally as a tribe into the subfamily Homolobinae van Achterberg, 1979 (van Achterberg, 1984). Traditionally, it has been treated as part of the subfamily Blacinae Foerster, 1862, sensu lato (together with the Orgilini, e.g. Muesebeck & Walkley, 1951). Marsh (1979) followed this arrangement: placing the tribe Orgilini in the subfamily Blacinae Foerster, 1862, sensu lato together with parts of the Helconinae (tribe Brachistini Foerster, 1862), the Orgilinae and the Charmontinae van Achterberg, 1979. This resulted in a biologically very diverse assemblage, containing endoparasites of both lepidopterous and coleopterous larvae. Shenefelt (1970) separated the Microtypini from the Orgilini and placed them in the subfamily Mimagathidinae Enderlein, 1905 (actually a junior synonym of the subfamily Orgilinae Foerster, 1862). Both the Microtypinae and Orgilinae contain parasites of concealed lepidopterous larvae and according to Čapek (1970) the larval morphology and biological evidence indicate a relationship with the Orgilinae. The Microtypinae in fact resemble to some degree both the Homolobinae (e.g. the shape of the first metasomal tergite, and both endoparasitic in lepidopterous larvae) and the Orgilinae. However, they lack the autapomorphies of these groups (especially the antescutellar depression of the Homolobinae and the pegs on the hind tibia apically of the Orgilinae; van Achterberg, 1987). A phylogenetic analysis of the subfamilies of the Braconidae (Quicke & van Achterberg, 1990) showed a close relationship with the Orgilinae, near the base of the Helconoid lineage. To avoid weakening of the concept of these subfamilies it is therefore preferable to treat the Microtypinae as a separate subfamily.

The relationship of the Microtypinae is complicated by the similarity of the new Neotropical genus *Neomicrotypus* to the Neotropical genus *Antestrix* van Achterberg, 1987. *Antestrix* is a highly aberrant genus that was included provisionally in the subfamily Orgilinae because it has minute tibial pegs. It shares with *Neomicrotypus* the

presence of posterior scutellar depression (fig. 21), a similar first metasomal tergite (fig. 18), and somewhat similar venation (fig. 13). Because of these characters, it may indicate a sistergroup-relationship between the Microtypinae and the Orgilinae.

For the identification of the subfamily Microtypinae (under Homolobinae), see van Achterberg (1990). For the terminology used in this paper, see van Achterberg (1988).

## Descriptions

### Subfamily Microtypinae Szépligeti, 1908

Microtypinae Szépligeti, 1908: 426; Quicke & van Achterberg, 1990: 42.

Blacinae; Muesebeck & Walkley, 1951: 113; Marsh, 1979: 276.

Mimagathidinae; Shenefelt, 1970: 263.

Microtypini; van Achterberg, 1984: 52, 1987: 6 (provisionally included into Homolobinae).

Orgilinae; Tobias, 1986: 269.

**Diagnosis.**— Head transverse, with frons largely flat and smooth (figs 6, 25); apex of antenna with spine (fig. 32) or spine absent (fig. 4); scapus robust and apically truncate (figs 2, 15, 26); occipital carina complete (fig. 6) or reduced medio-dorsally (fig. 14); maxillary palp with 6 and labial palp with 4 segments (fig. 17) or third segment reduced (fig. 2); malar suture absent (fig. 16) or obsolescent (figs 24, 27); dorsal pronope present near anterior border of pronotum (fig. 23) or absent (fig. 21); antescutal depression absent (figs 21, 23); prepectal carina complete; notauli present (fig. 8) or largely absent (fig. 21); precoxal sulcus absent (fig. 27) or present (fig. 2); scutellar sulcus wide (fig. 23); medio-posterior depression of scutellum distinct (figs 12, 21); propodeum largely smooth to largely coarsely rugose, without median carina, but (part of) areola may be present (figs 8, 21, 26); propodeal spiracle small, round, and in front of middle of propodeum (figs 2, 27); vein r-m of fore wing present, resulting in a small triangular or trapezoid second submarginal cell (figs 1, 13, 22); vein cu-a of fore wing inclivous (fig. 22) or vertical (fig. 13); vein r of fore wing issued behind middle of pterostigma (figs 13, 22); vein m-cu of fore wing distinctly antefurcal; vein 2-R1 of fore wing absent; marginal cell of hind wing narrowed apically (fig. 13); or subparallel-sided (figs 1, 22); vein 2A of hind wing absent (fig. 22) or nearly so; tarsal claws without (figs 3, 31) or with small ventral lamella (fig. 19); apex of hind tibia without pegs near insertion of spurs, at most with spiny setae; first tergite without dorsope (fig. 29), usually narrowed behind spiracles (figs 9, 29) except of *Neomicrotypus* (fig. 18), its dorsal carinae short, usually not surpassing level of spiracles (fig. 18), except of *Plesiotypus* (fig. 12); laterope deep (fig. 27); second tergite smooth (fig. 29) or sculptured (figs 9, 12); ovipositor rather long (figs 15, 27, 28), longer than metasoma.

**Biology.**— Only known for *Microtypus*: koinobiont endoparasites of concealed lepidopterous larvae, belonging to the Pyralidae, Tortricidae and Gelechiidae.

**Distribution.**— Contains three genera: *Microtypus* Ratzeburg, 1848 (Holarctic), *Neomicrotypus* gen. nov. (Neotropical), and *Plesiotypus* gen. nov. (Oriental, Malagasy, Pacific).

## Key to genera of the subfamily Microtypinae Szépligeti

1. Notauli largely absent (fig. 21); pronope absent or obsolescent (fig. 21); clypeus strongly convex (fig. 15); epistomal suture deep medially (fig. 16); occipital carina absent medio-dorsally (fig. 14); first metasomal tergite robust, without constriction behind spiracles (fig. 18); tarsal claws with small acute lamella (fig. 19); vein 3-SR of fore wing distinct (fig. 13); Neotropical ..... *Neomicrotypus* gen. nov.
- Notauli complete (figs 8, 23); pronope present (fig. 23), at least as a transverse depression anteriorly (fig. 8); clypeus rather flat to moderately convex (figs 5, 11, 27); epistomal suture shallow or absent medially (fig 7, 24); occipital carina usually present medio-dorsally (fig. 25; reduced in *Plesiotypus fullawayi*); first metasomal tergite more slender, with constriction behind spiracles (figs 9, 12, 29); tarsal claws without lamella (fig. 3); vein 3-SR of fore wing absent (fig. 22) or short (fig. 1) ..... 2
2. Tarsal claws slender (fig. 31); length of malar space 0.2-0.6 times basal width of mandible (fig. 27); precoxal sulcus absent (except for shallow depression; fig. 27); apex of antenna with spine (fig. 32); pronotum straight anteriorly and pronope removed from anterior margin (fig. 23); Holarctic ..... *Microtypus* Ratzeburg
- Tarsal claws comparatively robust (fig. 3); length of malar space 1.2-1.4 times basal width of mandible (fig. 2); precoxal sulcus present, medially crenulate (fig. 2); apex of antenna without spine (fig. 4); pronotum concave anteriorly and only with a transverse depression near anterior border (figs 8, 35); Oriental, Pacific, Malagasy ..... *Plesiotypus* gen. nov.

***Plesiotypus* gen. nov.**  
(figs 1-12)

Type species: *Plesiotypus depressus* spec. nov.

Etymology.— From “plesios” (Greek for “near”) and the generic name *Microtypus*, because it is closely related to the genus *Microtypus*. Gender: masculine.

Diagnosis.— Apex of antenna without spine (fig. 4); third segment of labial palp minute, inserted together with long fourth segment on second segment; occipital carina complete (fig. 6) or reduced medio-dorsally (*P. fullawayi*); clypeus rather flat (figs 5, 11); epistomal suture shallow or absent medially (fig. 7); length of malar space 1.2-1.4 times basal width of mandible (fig. 2); mandible twisted apically; pronope present as a transverse depression near anterior margin of pronotum (figs 8, 35); lateral carina of mesoscutum absent; notauli (nearly) complete (fig. 8); precoxal sulcus present, and (partly) sculptured (fig. 2); vein 3-SR of fore wing absent or short (figs 1, 33); vein 1-M of fore wing nearly straight (fig. 1); tarsal claws simple, without lamella and comparatively robust (fig. 3); first metasomal tergite comparatively slender (figs 9, 12, 34), slightly narrowed behind spiracles, sculptured or (largely) smooth; second tergite smooth or sculptured; second metasomal suture deep, narrow and smooth (figs 9, 12, 34).

Distribution.— Contains two Oriental and one Pacific species. From Malagasy I have seen a damaged female (CNC) of an undescribed species, which has the notauli absent posteriorly, vein 3-SR of fore wing distinct, the first metasomal tergite smooth, the scutellum distinctly convex, the prepectal carina weakly developed, the fore

wing distinctly banded, without trace of vein 2A of hind wing and the pronotum is straight anteriorly. It is the only true Microtypinae I have seen from Malagasy. The species of *Microtypus* described by Granger (1949) from Malagasy were transferred to the genus *Stantonina* Ashmead, 1904 (subfamily Origilinae) by Čapek & van Achterberg (1992). It is obvious from the general description by Granger that his three species do not belong to the Microtypinae because of the short vein M+CU of hind wing ("Cellule anale de l'aile inférieure très réduite") and (sub)interstitial vein cu-a of fore wing (this vein is distinctly postfurcal in Microtypinae; figs 1, 22).

Note.— *Plesiotypus* gen. nov. closely resembles the aberrant genus *Taphaeus* Wesmael, 1835, which has probably to be transferred from the Helconinae to the Blacinae. However, *Taphaeus* has the clypeus wide, the first discal cell of the fore wing is sessile anteriorly, the dorsople of the first metasomal tergite is present, and the vein CU1b of the fore wing is absent or obsolescent.

#### Key to species of the genus *Plesiotypus* nov.

1. Occipital carina complete (fig. 6); antennal segments 34-36; second metasomal tergite finely striate (figs 9, 12); hind tibia brownish-yellow or yellowish-brown; head partly (reddish-)brown; transverse carina of propodeum absent or obsolescent (figs 2, 8); Oriental ..... 2
- Occipital carina widely interrupted medio-dorsally; antennal segments 27-28; second tergite smooth (fig 34); hind tibia dark brown except its basal quarter; head completely dark (or blackish-) brown; transverse carina of propodeum distinct; Pacific: Hawaii ..... *P. fullawayi* (Beardsley)
2. Length of first metasomal tergite 1.5(♀)-2.0(♂) times its apical width (fig. 9); clypeus flattened (fig. 5); flagellum brownish-yellow baso-ventrally; third tergite with transverse row of punctures (fig. 9) ..... *P. depressus* spec. nov.
- Length of first tergite 2.3(♀)-2.5(♂) times its apical width (fig. 12); clypeus more convex (fig. 11); flagellum dark brown baso-ventrally; third tergite without punctures ..... *P. convexus* spec. nov.

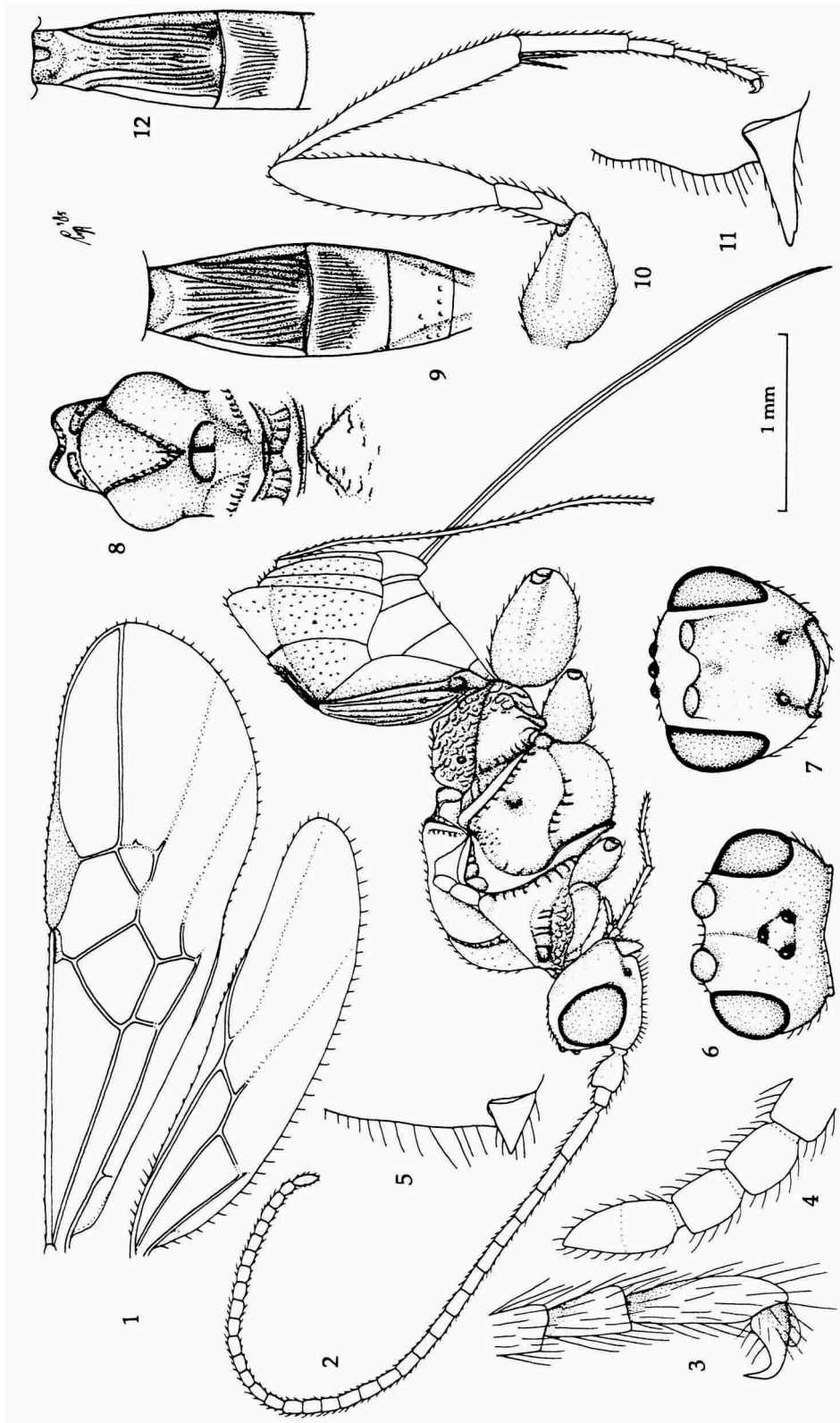
#### *Plesiotypus depressus* spec. nov. (figs 1-10)

Material.— Holotype, ♀ (CNC), "India, Anamalai Hills, Cinchoma, 3500'[ft], v.1959, P.S. Nathan". Paratypes: 2 ♂♂ (CNC, RMNH), "S India, Anamalai Hills, Madras St., 3500'[ft], v.1963, P.S. Nathan".

Holotype, ♀, length of body 3.3 mm, of fore wing 3.5 mm.

Head.— Antennal segments 34, with short, dark tyloids, length of third segment 1.4 times fourth segment, length of third, fourth and penultimate segments 3.7, 2.6 and 1.3 times their width, respectively (figs 2, 4); length of maxillary palp 1.4 times height of head; in dorsal view length of eye 2.3 times temple (fig. 6); OOL:diameter of ocellus:POL = 6:3:4; vertex setose, rather convex and punctulate; face rather flat, punctulate (fig. 7); clypeus largely flat and smooth; length of malar space 1.4 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.4 times its height; pronotum deeply con-



Figs 1-10, *Plesiotypus depressus* gen. nov. & spec. nov., ♀, holotype; figs 11, 12, *P. corrivus* gen. nov. & spec. nov., 2, habitus, lateral aspect; 3, outer hind claw; 4, apex of antenna; 5, 11, clypeus, lateral aspect; 6, head, dorsal aspect; 7, head, frontal aspect; 8, mesosoma, dorsal aspect; 9, 12, first and second metasomal tergites, dorsal aspect; 10, hind leg; 11, 12: 5 ×; 5, 11: 3 ×; 6, 7: 1.5 ×; 8, 9, 12: 1.2 ×.

cave anteriorly (fig. 8); side of pronotum crenulate medio-anteriorly and posteriorly, and densely rugose (fig. 2); precoxal sulcus completely impressed, with some coarse crenulae medially (fig. 2); remainder of mesopleuron smooth, but ventrally punctulate; middle lobe of mesoscutum sparsely punctate and lateral lobes mainly punctulate, setose; notauli complete, distinctly crenulate (fig. 8); scutellar sulcus deep and with one carina; scutellum slightly convex and punctulate; surface of propodeum coarsely rugose, anteriorly sparser than posteriorly, and laterally densely reticulate (figs 2, 8).

Wings.— Fore wing:  $r:3-SR+SR1 = 15:81$ ;  $2-SR:r-m = 19:7$ ; 3-SR absent (fig. 1); r-m unsclerotized and with short stub (fig. 1; in both wings, but stub absent in paratypes).

Legs.— Hind coxa punctulate; length of femur, tibia and basitarsus of hind leg 4.1, 7.2, and 6.4 times their width, respectively; length of hind tibial spurs 0.5 and 0.45 times hind basitarsus; apex of hind tibia with 7 spiny bristles.

Metasoma.— Length of first tergite 1.5 times its apical width, its surface strongly costate, its dorsal carinae developed basally, but disappearing among other sculpture (fig. 9); second tergite striate, but posteriorly and laterally smooth; third tergite with row of punctures (fig. 9); length of ovipositor sheath 0.60 times fore wing.

Colour.— Blackish; head dorsally, pronotum anteriorly, mesoscutum partly (remainder blackish), scutellum, second tergite laterally and apically, third tergite largely, dark (reddish-)brown; antenna (except darkened apex), face, clypeus yellowish-brown; legs, palpi, tegulae, metasoma ventrally, brownish-yellow; pterostigma and veins brown; wing membrane slightly infuscated.

Variation.— Both the paratypes have 34 antennal segments, the length of the fore wing 3.2-3.4 mm, and of body 3.5-3.7 mm, the length of the first metasomal tergite 1.9-2.0 times its apical width, and pronotum may be less concave anteriorly than figured.

### ***Plesiotypus convexus* spec. nov.**

(figs 11, 12)

Material.— Holotype, ♀ (CNC), "S India, Kodaikanal Pulney Hills, 6500' [ft], v.1953, P.S. Nathan". Paratype: 1 ♂ (CNC), topotypic, vi.1953. Another specimen from Nepal (CNC) may belong to this species, but it has the propodeum densely rugose dorsally, the hind coxa dark brown and the second metasomal suture obsolescent medially.

Holotype, ♀, length of body 3.5 mm, of fore wing 3.7 mm.

Head.— Antennal segments 36, length of third segment 1.4 times fourth segment, length of third, fourth and penultimate segments 4.4, 3.1 and 1.2 times their width, respectively; length of maxillary palp 1.4 times height of head; in dorsal view length of eye 1.6 times temple; OOL:diameter of ocellus:POL = 7:3:4; face sparsely punctate; clypeus rather convex (fig. 11); length of malar space 1.2 times basal width of mandible; further as *P. depressus*.

Mesosoma.— Very similar to holotype of *P. depressus*, only propodeum largely areolate dorsally, hardly rugose.

Wings.— Fore wing: length of r 1.3 times maximum width of pterostigma; 1-SR shorter than figured, further as *P. depressus*.

Legs.— Apex of hind tibia with 5 spiny bristles.

Metasoma.— Length of first tergite 2.3 times its apical width, its surface longitu-

dinally costate, its dorsal carinae developed in basal 0.9 of tergite (fig. 12); second tergite finely striate and with some punctures, medio-basally and posteriorly smooth (fig. 12); third tergite smooth; remaining tergites with subapical transverse row of punctures; second-seventh epipleura punctate; length of ovipositor sheath about 0.7 times fore wing, further as *P. depressus*.

Colour.—Blackish; face, temples, frons laterally, propleuron, pronotal side dorso-apically and ventrally, second and third metasomal tergites reddish-brown; clypeus, scapus, pedicellus, annellus, legs, and metasoma ventrally, yellowish-brown; pterostigma, veins (largely) and flagellum dark brown; palpi and tegulae pale yellowish; wing membrane weakly infuscated.

Variation.—Paratype male has the length of the fore wing 3.4 mm, and of body 3 mm, length of first metasomal tergite 2.5 times its apical width; second tergite smooth; second metasomal suture complete and narrow; hind tibia and tarsus dark brown; further as holotype.

***Plesiotypus fullawayi* (Beardsley, 1961) comb. nov.**  
(figs 33-36)

*Microtypus fullawayi* Beardsley, 1961: 352-354, figs 2B, 4A; Shenefelt, 1970: 265.

Material.—Paratype, ♀ (BPBM), "Hon. [= Honolulu, Oahu, Hawaii], /03 [?date], R.C.L. Perkins Collection", "Paratype", "*Microtypus fullawayi* Beardsley". The holotype (♀) and the second ♀-paratype (also from Oahu) not examined.

Easily to recognize because of different shape and sculpture of first and second metasomal tergites (fig. 34), shape of pronotum and dorsal pronope (fig. 35), and the low number of antennal segments (27-28). The anterior 0.7 of the precoxal sulcus is sculptured, length of fore wing 2.3 mm, of body 2.6 mm, and length of ovipositor sheath 0.60 times fore wing.

***Neomicrotypus* gen. nov.**  
(figs 13-21)

Type species: *Neomicrotypus penai* spec. nov.

Etymology.—From "neos" (Greek for "new") and the generic name *Microtypus*, because it is closely related to the genus *Microtypus* and occurs in the New World. Gender: masculine.

Diagnosis.—Apex of antenna missing (fig. 15); third segment of labial palp small, long fourth segment inserted on third segment (fig. 17); occipital carina narrowly interrupted medio-dorsally (fig. 14); clypeus strongly convex (figs 15, 16); epistomal suture deep medially (fig. 16); length of malar space about 1.3 times basal width of mandible (fig. 15); mandible hardly or not twisted apically; pronope absent (fig. 21) or obsolescent; lateral carina of mesoscutum distinct; notauli absent, at most with reticulate sculpture medio-posteriorly (fig. 21); precoxal sulcus absent (fig. 15); vein 3-SR of fore wing distinct, short (fig. 13); vein 1-M of fore wing distinctly curved (fig. 13); vein SR1 of fore wing curved; tarsal claws with ventral lamella, comparatively slender (fig. 19); first metasomal tergite robust (fig. 18), parallel-sided behind

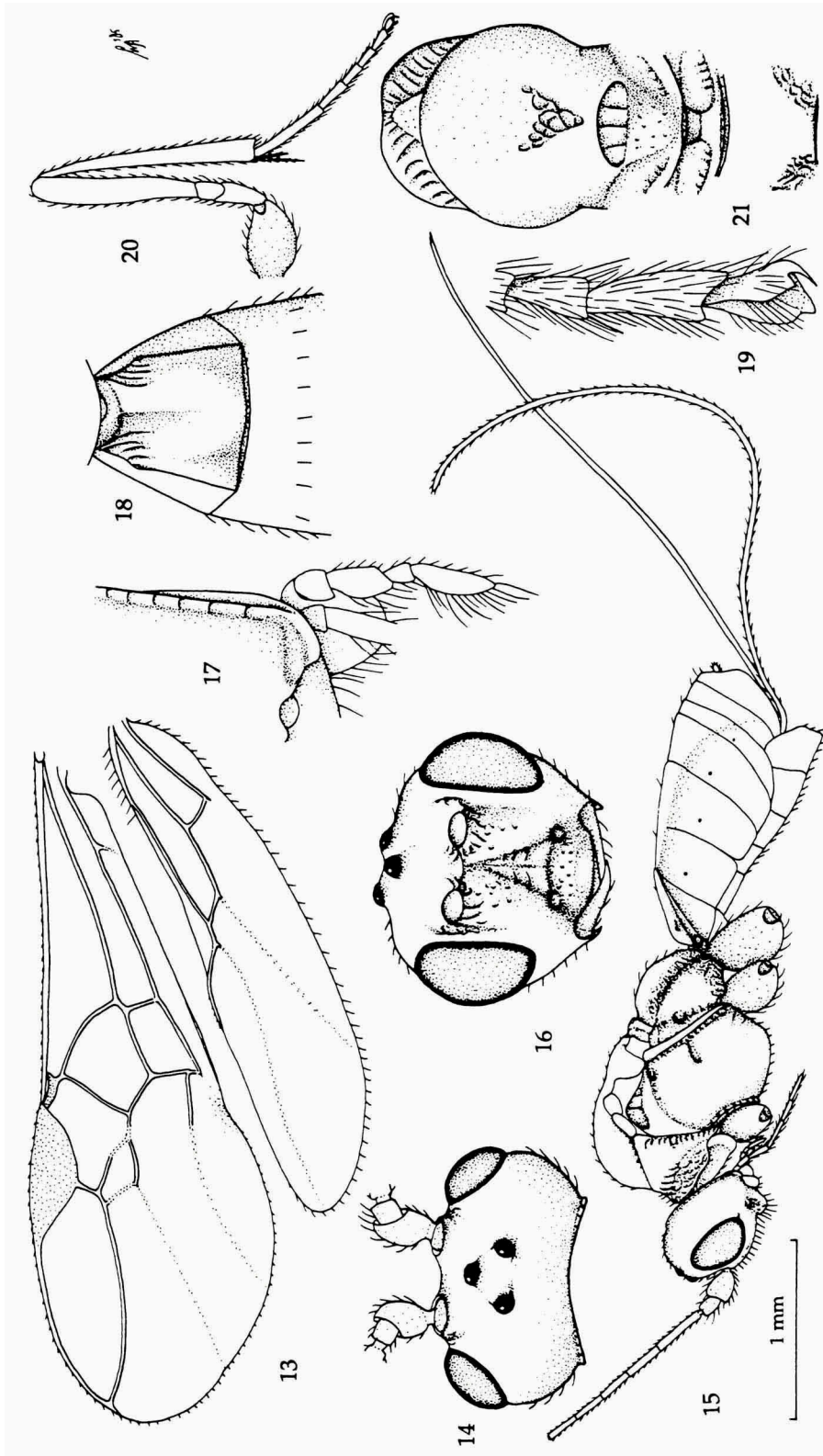


Fig 13-21, *Neomicrotypus penai* gen. nov. & spec. nov., ♀, holotype. 13, wings; 14, head, dorsal aspect; 15, habitus, lateral aspect; 16, head, frontal aspect; 17, occipital flange and labial palp; 18, first metasomal tergite, dorsal aspect; 19, outer hind leg; 20, hind leg; 21, mesosoma, dorsal aspect. 13, 15, 20: 1 × scale-line; 14, 16, 18, 21: 2 ×; 17, 19: 5 ×.



spiracles, largely smooth; second tergite smooth; second metasomal suture absent.

Distribution.— Contains only the type species from Chile. Two males (CNC) from Chile may be conspecific, but have vein *r* of fore wing as long as vein 3-SR, one male has the mesoscutum smooth medio-posteriorly, the mesoscutum less setose, the pronope is present as an obsolescent impression, and the legs are paler than of the holotype.

***Neomicrotypus penai* spec. nov.**  
(figs 13-21)

Material.— Holotype, ♀ (CNC), "Chile, Malleco, Pichinahuel, 11-1300 m, i.[19]77, L.E. Pena".

Holotype, ♀, length of body 3.5 mm, of fore wing 3.7 mm.

Head.— Antennae broken, remaining segments 7, sixth segment with some tyloids, length of third segment 1.4 times fourth segment, length of third, and fourth segments 5.2, and 3.8 times their width, respectively (fig. 15); length of maxillary palp equal to height of head; in dorsal view length of eye 0.8 times temple (fig. 14); OOL:diameter of ocellus:POL = 14:7:14; vertex setose, convex and smooth; face rather flat, with dorsally converging pair of shallow and wide depressions, largely smooth, with some weak rugae and punctures (fig. 16); clypeus strongly convex, punctate dorsally, largely smooth ventrally (fig. 16); length of malar space 1.3 times basal width of mandible.

Mesosoma.— Length of mesosoma 1.5 times its height; pronotum nearly straight anteriorly (fig. 21); side of pronotum crenulate medio-anteriorly and posteriorly, and largely rugose ventrally (fig. 15); mesopleuron smooth, largely glabrous medially; mesoscutum distinctly convex, laterally setose, remainder glabrous, smooth, except for reticulate sculpture medio-posteriorly (fig. 21); scutellar sulcus deep and with three carinae; scutellum slightly convex and sparsely punctulate; surface of propodeum smooth, except some rugae laterally, strongly convex (fig. 21).

Wings.— Fore wing: *r*:3-SR:SR1 = 7:4:69; 2-SR:3-SR:*r*-m = 10:2:6; *r*-m unsclerotized and without short stub (fig. 13); 1-CU1:2-CU1 = 1:6.

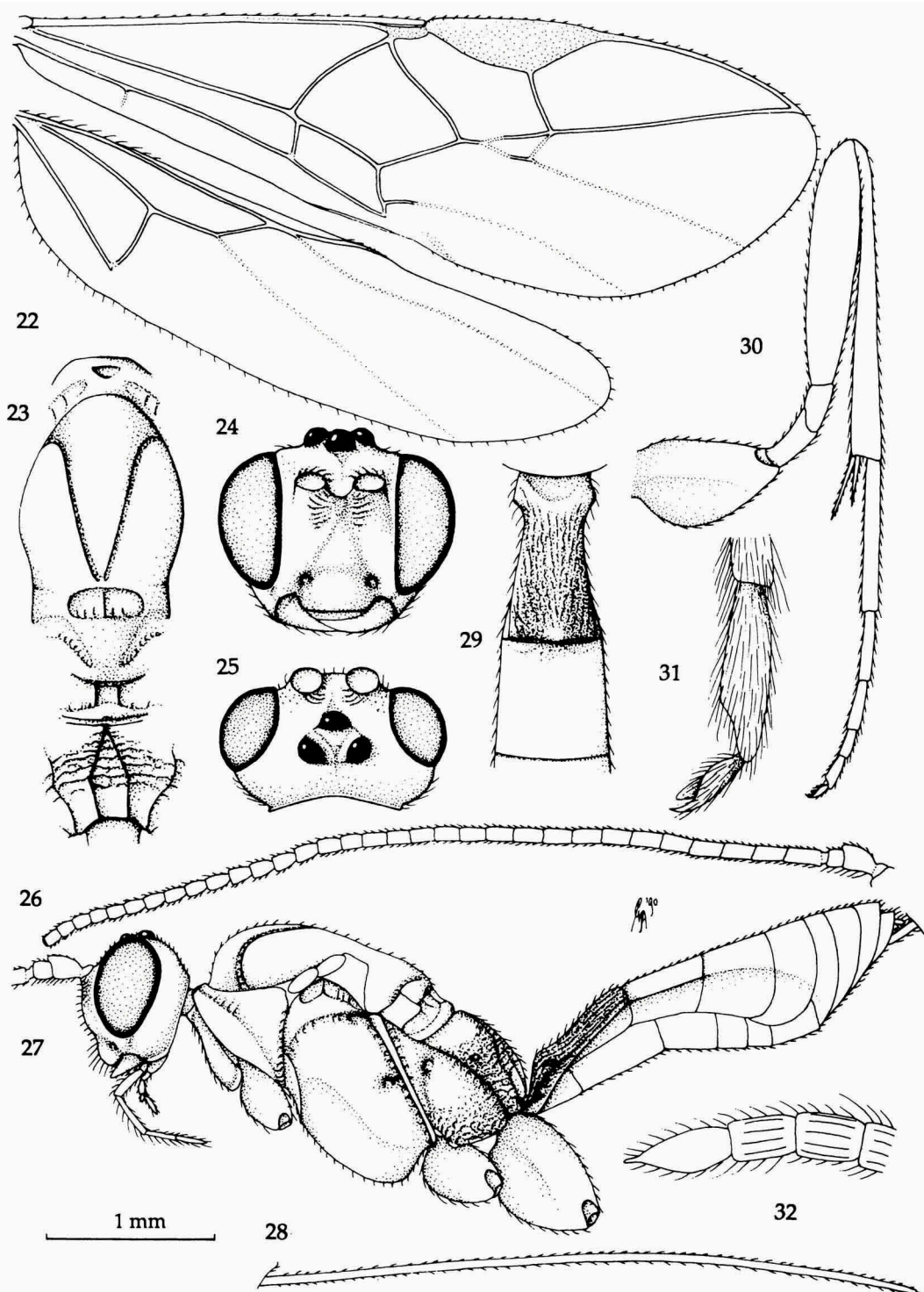
Legs.— Hind coxa largely smooth; length of femur, tibia and basitarsus of hind leg 5.0, 9.1, and 7.2 times their width, respectively; length of hind tibial spurs 0.5 and 0.45 times hind basitarsus; apex of hind tibia without any spiny bristles.

Metasoma.— Length of first tergite 0.8 times its apical width, its surface rather flat, smooth, except some basal striae, its dorsal carinae shortly developed basally (fig. 18); second tergite smooth; third tergite without punctures; length of ovipositor sheath 0.99 times fore wing.

Colour.— Black; antenna, coxae, trochanter, trochantellus, tarsi, and metasoma (except first tergite) dark brown; palpi, pterostigma, parastigma, veins, and tegulae largely, brown; metanotum medio-posteriorly, and remainder of legs (but femora largely yellowish medially) brownish; annellus yellowish; wing membrane slightly infuscated.

***Microtypus* Ratzeburg, 1848**  
(figs 22-32)

*Microtypus* Ratzeburg, 1848: 47; Shenefelt, 1970: 264-266; Tobias, 1986: 274; Čapek & van Achterberg, 1992: 324 (key to species). Type species (by monotypy): *Microtypus wesmaelii* Ratzeburg, 1848 [neotype designated by Čapek & van Achterberg, 1992].

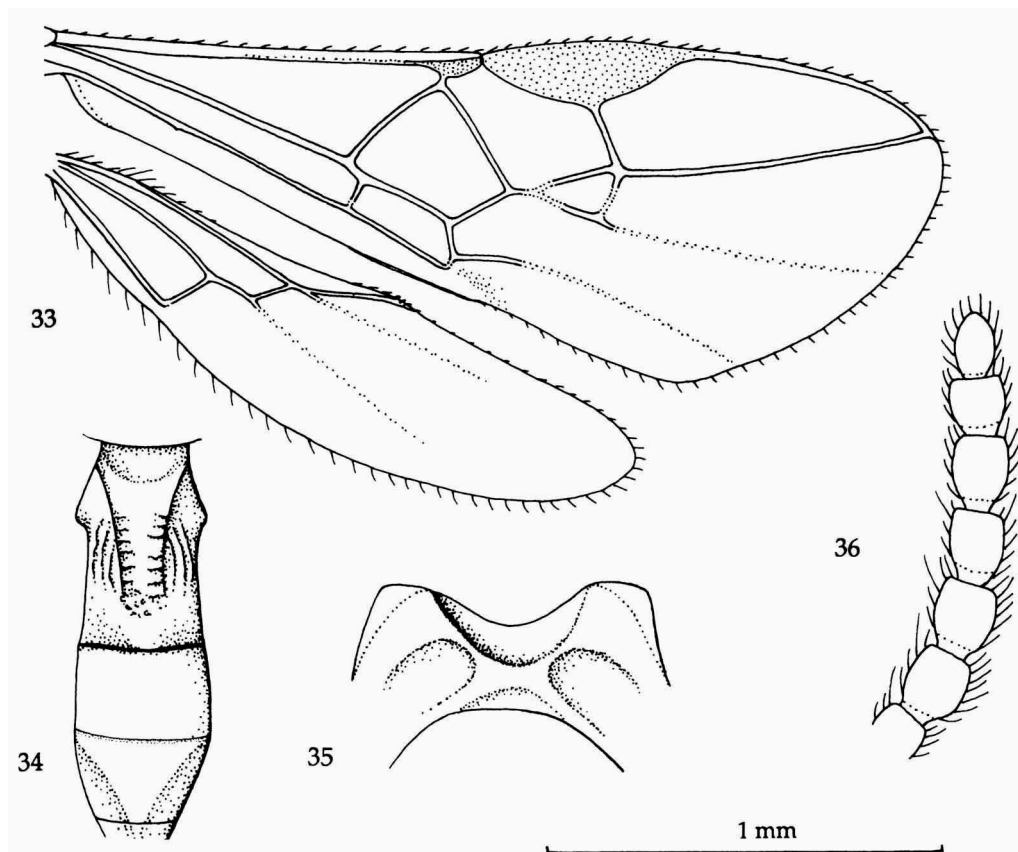


Figs 22-32, *Microtypus wesmaelii* Ratzeburg, ♀, neotype, but 32 of ♀, Netherlands, Naardermeer. 22, wings; 23, mesosoma, dorsal aspect; 24, head, frontal aspect; 25, head, dorsal aspect; 26, antenna; 27, habitus, lateral aspect; 28, ovipositor sheath; 29, first and second metasomal tergites, dorsal aspect; 30, hind leg; 31, outer hind claw; 32, apex of antenna. 22, 26-28, 30: 1 × scale-line; 23-25, 29: 1.6 ×; 31, 32: 5 ×.

*Similearinus* Glowacki & Karpiński, 1967: 89, 95. Type species (by monotypy): *Similearinus ilinskyi* Glowacki & Karpiński, 1967 [holotype lost?].

Diagnosis.— See Čapek & van Achterberg (1992).

Distribution.— Holarctic: five species.



Figs 33-36, *Plesiotypus fullawayi* (Beardsley) comb. nov., ♀, paratype. 33, wings; 34, first-third metasomal tergites, dorsal aspect; 35, pronotum, dorsal aspect; 36, apex of antenna. 33, 34: 1 × scale-line; 35, 36: 2.1 ×.

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